

Cucumber-flavored Java

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dxChartPro

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Agenda

1. What is BDD?
2. Why BDD?
3. How to use BDD in Java?
4. Links



BDD history

- Behavior-driven development
- Dan North, 2006
- Invented BDD while teaching TDD
- JBehave - first BDD framework
- Ruby: RSpec, Cucumber



What BDD looks like?

- Specification consists of user stories
- Narrative
 - Who is a stackholder?
 - Which effect the stakeholder wants to have?
 - What value will be derived from this effect?
- User story is a collection of scenarios
- Scenario is a sequence of sentences which start with BDD Keywords



BDD Keywords

- Preconditions - **Given** ...
- Events - **When** ...
- Postconditions - **Then** ...



Winnie Story

Story: Steal honey from bees

Narrative:

In order to get honey

As a Winnie-the-Pooh

I want to steal honey



Winnie Scenario

Given a blue baloon
When I fly to bees
And I'm singing cloudlet
song
Then bees will thought
that I'm a cloud
And I can steal honey



Integration tests

- With little “BDD magic” requirements in such format can be used as integration tests
- Details in 3rd part (How to use BDD in Java?)



Chart specifics

- Charts are not easy to write requirements for
- Sometimes it is just “It should be pretty”



How many charts in Devexperts?

- TOS Charts
- Charts in dxMobile
- dxCharts
- dxChart5
- dxChartPro
- ...



How many charts in Devexperts?

- dxCharts like TOS Charts, but on Flex
- dxChart5 like dxCharts, but on HTML5
- dxChartPro like dxCharts, but on Java
- Charts in dxMobile like dxChartPro, but on mobile devices



Time axis marks

- Base feature of trading charts
- Main requirement: “It should look nice”
- Are all implementations looks alike?



Time axis marks

- Base feature of trading charts
- Main requirement: “It should look nice”
- No, different versions have different bugs



How to solve this problem?



How to solve this problem?

Write a story about it!



Pros

- We can share requirements between charts implementations (if we want to)
- It's plain text, it can work as integration tests with Java, Ruby, JavaScript, C++, Flex, etc.
- Not only developer can write/read it:
 - analyst/customer wants a feature
 - QA finds a bug



Choose tool

- Concordion
- Cucumber-jvm
- Instinct
- JBehave
- Spock
- ...



Choose tool

- ~~Concordion (HTML)~~
- Cucumber-jvm
- ~~Instinct (Java)~~
- JBehave
- Spock (Groovy)
- ...



Choose tool

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JBehave

- POJO with step definitions
- Scenario steps map to Java methods via annotations (@Given, @When, @Then, etc.)
- *\$parameterName*, < *parameterName* >
- Configure story runner



JBehave Story

Plain
text

Scenario: A trader is alerted of status

Given a stock and a threshold of 15.0

When stock is traded at 5.0

Then the alert status should be OFF

When stock is traded at 16.0

Then the alert status should be ON



JBehave StepDef

POJO

```
public class TraderSteps {  
    private TradingService service; // Injected  
    private Stock stock; // Created  
  
    @Given("a stock and a threshold of $threshold")  
    public void aStock(double threshold) {  
        stock = service.newStock("STK", threshold);  
    }  
    @When("the stock is traded at price $price")  
    public void theStockIsTraded(double price) {  
        stock.tradeAt(price);  
    }  
    @Then("the alert status is $status")  
    public void theAlertStatusIs(String status) {  
        assertThat(stock.getStatus().name(), equalTo(status));  
    }  
}
```



JBehave Annotations

- @Given
- @When
- @Then
- @Alias, @Aliases
- @BeforeScenario, @AfterScenario
- @BeforeStory, @AfterStory



Tabular Parameters

- **Given** the users:

login	password
Larry	123
Moe	qwerty
Curly	password

When we delete user with login "Curly"

Then the users are:

login	password
Larry	123
Moe	qwerty

- ExamplesTable



JBehave Configuration

Only
once

```
public class TraderStories extends JUnitStories {

    public Configuration configuration() {
        return new MostUsefulConfiguration()
            .useStoryLoader(new LoadFromClasspath(this.getClass()))
            .useStoryReporterBuilder(new StoryReporterBuilder()
                .withCodeLocation(codeLocationFromClass(this.getClass()))
                .withFormats(CONSOLE, TXT, HTML, XML));
    }

    public List<CandidateSteps> candidateSteps() {
        return new InstanceStepsFactory(configuration(),
            new TraderSteps(new TradingService())).createCandidateSteps();
    }

    protected List<String> storyPaths() {
        return new StoryFinder().findPaths(codeLocationFromClass(this.getClass()),
            "**/*.story");
    }
}
```



JBehave Output

HTML

Scenario: A trader is alerted of status

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JBehave infrastructure

- Maven
- IntelliJ support
- TeamCity
- JBehave JUnit Runner



IntelliJ support

```
basic_story.story ×  
  
Meta:  
  
Narrative:  
As a user  
I want to perform an action  
So that I can achieve a business goal  
  
Scenario: scenario description  
Given a system state  
When I do something  
Then system is in a different state  
!--And commented step should be gray  
And undefined step should show error
```



TeamCity support

- Run your stories as a part of CI
- Create TeamCity artifact
- Create TeamCity custom tab



What to test?

- dxChartPro - Swing component
- JBehave stories - integration tests
- Lets test all parts of MVC



What is the problem?

- Different Locale (ru_RU - on my PC, en_US - on TeamCity agents)
- Font and FontMetrics on Linux and Windows
- Headless Java on TeamCity agents
- We have scenarios depending on *System#currentTimeMillis*



HowTo test Swing UI?

- DebugGraphics
- But we use a lot of BufferedImages
⇒ DebugBufferedImage
- How to find components to run action on?



Links

- “Introducing BDD” by Dan North
- BDDWiki
- JBehave
- Cucumber
- “Software Engineering for SaaS”
@ coursera.org, chapter #4



Thank You!

